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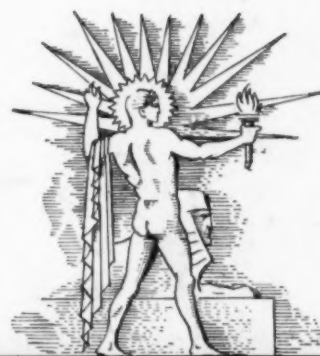
SCIENCE NEWS LETTER

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MAY 27 1941

DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE



May 24, 1941

Steel for Defense

See Page 335

A SCIENCE SERVICE PUBLICATION

Do You Know?

The first really fine *emeralds* that Europeans ever saw came from Peru.

A hundred years ago, the American *whaling* fleet was the world's largest.

British people are being encouraged to use more *potato flour* as a wartime food.

Poison ivy is most poisonous in spring or early summer, when the sap is most abundant.

Giant *mink* were once numerous in Maine, judging by bones in Indian shell-heaps.

Coconut husks have a new industrial use in Puerto Rico, as a source of fiber for padding in upholstery and cushions.

In 1776, the daily food ration of *Washington's soldiers* was a pound of beef, a pound of flour, 6.86 ounces of dried peas, 1.14 ounces of rice, a pint of milk and a quart of spruce beer.

An oceanographer says that most *lakes* have a top layer of water heated by the sun, scientifically called the epilimnion, a transition layer, called the thermocline, and a lower cold layer, the hypolimnion.

For the first time in its history, the United States may presently have more females than males in its *population*—due to not receiving foreign immigrants, who were predominantly males, and also to aging of the population, in which women are favored in survival.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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ZOOLOGY

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Where could you find a wine colored shark with 20 rows of teeth? p. 328.

The United States now manufactures 96% of its *dyes*.

A *Navy ship* is usually launched when 60 to 70% finished.

For best effect, tall *flowers* should ordinarily be placed below eye level, says a University of New Hampshire botanist.

Different *trees* have different effects on the soil, Cornell scientists say: fallen leaves of some species mix into the soil quickly, others slowly, and some leaves increase soil acidity while others decrease it.

A "hand" of *bananas* has about 10 to 20 "fingers."

Plastics are finding use in equipment for 10 different sports.

Charles Darwin's scientific studies included the importance of burrowing *earthworms* in loosening up the soil.

"Getting down to *brass tacks*" is a relic of the time when storekeepers, once the customer had decided on material, measured the yards, feet, and inches by brass tacks driven into the counter.

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MEDICINE

New Leads to Prevention of Infantile Paralysis Found

During Epidemics, Individuals Should Avoid Chilling And Strenuous Exercise; See Physician as Soon as Ill

DISCOVERIES that may lead to prevention of infantile paralysis were announced in reports to the medical committee of the National Foundation for Infantile Paralysis.

The mouth and alimentary tract are the probable areas of invasion by the virus of the disease, rather than the nose, as previously believed, and the alimentary tract is the chief site from which the virus is eliminated, Dr. Albert B. Sabin, of the University of Cincinnati, reported.

This puts the disease in a class with ailments like typhoid fever, instead of in a class with colds and influenza, from the standpoint of how it is spread and how its spread may be prevented. Diseases like the common cold which invade the body by way of the nose are spread by germs in nasal discharges, the breath and the saliva. Dr. Sabin could not find the causative virus in nasal secretions or saliva from patients sick with infantile paralysis, nor in portions of the nerves

of smell examined after death in 12 fatal human cases. These findings, he pointed out, do not agree with the theory that the virus enters the body through the nose and travels along the nerves of smell to the brain and spinal cord.

Avoiding strenuous exercise and chilling during epidemics was advised by Dr. Sabin and Dr. Sidney O. Levinson, of Chicago, as a possible method of preventing the paralysis even if it does not prevent getting the disease.

"The history of heavy exercise (playing ball, swimming, hiking, etc.) is very frequently given by patients with paralytic poliomyelitis, and a limited personal inquiry has revealed that the interval between this exercise and the onset of paralysis is usually less than 24 hours," Dr. Sabin said. "This short interval suggests not only that those individuals were already harboring the virus in their nervous systems, but also that it might already have involved their medulla ('after-brain') and spinal cord and that the

exercise could be the factor which converts what might have remained an inapparent or nonparalytic type of poliomyelitis into the frankly paralytic type of the disease."

This would mean that, at least in epidemic areas, those persons who have fever, headaches, intestinal upsets, pain in the back and neck, and other otherwise unexplained symptoms of acute sickness, should not only see a physician immediately but also, under no circumstances, should indulge in heavy exercise.

Dr. Levinson stated that monkeys with infantile paralysis who were chilled by immersion in cold water developed a more severe paralysis than did either those that remained in their cages or those that were immersed in water at body temperature. This would indicate the obvious necessity of guarding humans with the disease against chilling.

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PUBLIC HEALTH

Find Clues For Predicting Infantile Paralysis Outbreaks

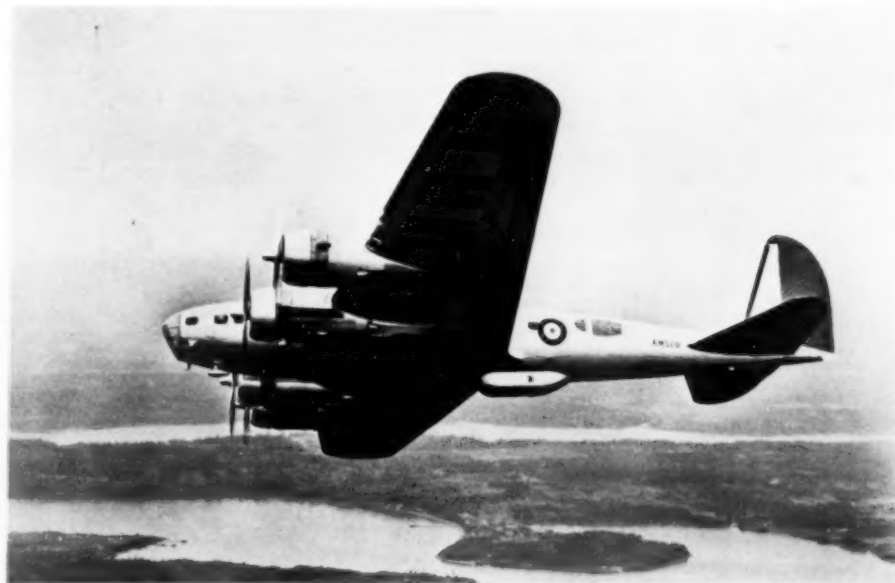
CLUES for predicting where infantile paralysis outbreaks are likely to occur in the summer have been discovered by Dr. C. C. Dauer, epidemiologist of the District of Columbia Health Department.

The clues point to a possible outbreak of the dreaded childhood malady in Virginia this coming summer, Dr. Dauer suggests. (*Public Health Reports*)

The epidemics may not always come off as predicted. The clues which foretell the possibility are found in the number of infantile paralysis cases occurring in a given locality in the late fall and early winter. When there are a relatively large number of cases in a community at such a season, that community and surrounding area is likely to have a severe outbreak the following summer, Dr. Dauer finds from examining epidemic records as far back as the big 1916 infantile paralysis epidemic, when 27,363 cases were reported from 27 states.

Although no preventive of infantile paralysis has yet been discovered, Dr. Dauer suggests that the possibility of predicting where summer epidemics may come will give scientists a chance to test any preventive measures that may be devised and to carry on valuable preliminary studies on the epidemiology and immunology of the disease.

The records show, he says, that "several counties in eastern Kentucky and western West Virginia which had a high incidence in the fall of 1939 appear to have



FLYING FORTRESS

This American ship now is seen wearing the bullseyes of the R. A. F. This Boeing B-17C-type bomber has a top speed of over 300 miles an hour and is especially equipped for high altitude flying.

been the focus from which the infection spread to the surrounding area in the summer of 1940. Likewise, the small group of counties in Iowa which reported poliomyelitis in larger number than usual in the fall and winter of 1939-1940, appear to have been the center from which the epidemic in that area may have spread the following summer.

"Several counties in northern Wisconsin reported a number of cases late in the fall of 1939 and a considerable number in January and February of 1940. In the summer of 1940 the disease began to appear first in the area comprising these counties and in the counties of the upper peninsula of Michigan immediately after.

"Such occurrences as described above

are not unusual since several similar instances are to be found in the past decade."

As to this coming summer, Dr. Dauer points out: In the state of Virginia poliomyelitis cases were reported in larger numbers than usual, during the months of November and December of 1940. Most of these late cases were reported from counties located in the southwestern part of the State. It will be interesting to see if this instance of occurrence of the disease in this locality in the late fall will be the forerunner of a more widespread outbreak in Virginia and the surrounding area in the summer of 1941."

Science News Letter, May 24, 1941

PHYSICS

Officials Foresee Serious Shortage of Physicists

Colleges Will Graduate About 250 New Physicists This Year; Need Is for Over 1,000; Other Shortages

AN ACUTE shortage of physicists for defense work is foreseen by officials here. They are needed for investigating problems of electricity, strength of materials and means of protecting against bombs, mines, etc., as well as new ways of obtaining power.

Colleges will graduate about 250 new physicists this year. We need over 1,000.

An accurate assay of the new reinforcements for Uncle Sam's army of scientific and technical personnel and the extent to which they fall short of meeting immediate requirements of the Government and the defense industries will be available in about three weeks. Replies will then be received to a questionnaire now going out to all college presidents.

The National Roster of Scientific and Specialized Personnel, master list of America's available resources in scientific brains and specialized training, has asked all college presidents to furnish the number of physicists, chemists, psychologists and other scientists they will graduate this spring.

Forms will then be furnished to the colleges to pass on to these graduates, so that they may automatically be added to the National Roster.

In line with President Roosevelt's policy and the action of the Selective Service System in recommending special con-

sideration by draft boards of requests for deferment by students in chemistry, engineering and medicine, it is anticipated that similar recommendations may be made for students in physics, psychology and other sciences where shortages are likely and where the need for additional manpower may seriously delay the defense program.

The shortage of physicists is believed to be much more serious than that likely to occur in chemistry. Fortunately, the United States has large numbers of trained chemists and chemical engineers—a situation attributed to the stimulus of the first World War.

When America entered the War in 1918, the need for chemists was keenly felt. At that time, Germany led in chemical development. But since that time, we have had more than twenty years in which to train chemists. Today, about 60,000 chemists are already registered in the National Roster.

This War may provide a similar urgency to direct intelligent young students into the field of physics. But up to date, physics has not attracted many. Only 7,000 physicists are now listed in the Roster.

In psychology, the number available is still smaller. There are only about 3,000 psychologists in the United States. The Government and defense industries

are having difficulty in finding enough trained personnel especially in clinical and abnormal psychology, psychological and personnel testing, and in the analysis of propaganda.

Serious shortages also seem to exist in marine engineering and mechanical engineering.

To aid in meeting defense needs, the National Roster is now preparing to list trained personnel in the medical sciences. It is also planned to list motion picture engineers and distributors.

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PSYCHOLOGY

Committee Locating and Listing Psychologists

TO AID in meeting growing defense needs for psychologists and to avert a possible acute shortage of professionally trained personnel in this science, a special committee of the National Research Council is locating and listing psychologists qualified and available for the work needed.

This Committee on the Listing of Personnel in Psychology is working under the auspices of the National Research Council's Emergency Committee in Psychology. It will supplement the records already available in the National Roster of Scientific and Specialized Personnel, and will work in cooperation with the Roster.

Defense needs have brought a greatly stepped-up demand for psychologists who understand how to sort men out according to their various talents, aptitudes and skills so that each man can be placed at the task for which he is best fitted.

The Government and private defense industries also need psychologists for developing new training methods and for supervising the training of great numbers of workers in the shortest possible time.

Clinical psychologists are also needed to help provide for the mental health of America and to aid in protecting individuals from avoidable mental strains for which they are not fitted.

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● RADIO

B. P. Caldwell, Jr., assistant secretary of Underwriters' Laboratories, Inc., will talk about incendiary or sabotage and normal accidents and fires that slow up defense production as guest scientist on "Adventures in Science," with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System. Thursday, May 29, 3:45 p.m. EDT, 2:45 EST, 1:45 CST, 12:45 MST and 11:45 a.m. PST. Listen in on your local station. Listen in each Thursday.

PHYSIOLOGY

Transplanted Eyes In Salamanders Regain Sight

Thus Far, However, Transplants of Mammalian Eyes Have Been Unsuccessful; Opossum Is Being Studied

EYES of various kinds of animals have been successfully transplanted, with return of vision, in experiments reported in a lecture by Prof. L. S. Stone of Yale University School of Medicine. Most of the work, Prof. Stone said, has been with salamanders, long-bodied relatives of frogs and toads. The transplants were made at all ages, from embryo to adult.

While the transplanted eyeballs grew into place successfully, the regaining of vision was a somewhat roundabout process. The severed ends of the optic nerve did not unite. Instead, there was a new growth of both nerve and retina, and vision was restored when this process was completed, after about two months. The same eye, Prof. Stone stated, has been repeatedly grafted, with return of vision each time. He has even exchanged eyes between salamanders of different species.

Thus far, experiments with mammalian eye transplants have not been successful at the Yale laboratory. When rats' eyes were transplanted, they degenerated and were resorbed into the animals' bodies, the process taking about four months. Resorption also occurred in fish with transplanted eyes.

"At the present time the opossum is being studied as the most promising mammal for eye transplantation," Prof. Stone continued. "At birth the young are quite embryonic. The eye is so primitive at this time that it is in the same stage of development as a five-weeks-old human embryo. This condition lends itself to an experimental analysis in a way that is not possible in any other mammal."

In operations on the eyes of embryo salamanders, Prof. Stone learned some new facts about the factors influencing normal eye development. The experiments showed that the formation of the lens was dependent on the action of the optic centers growing from the primitive nervous system, and that the lens could be primarily governed by an early interference with the factors underlying the primitive nervous system.

"So far as we know," he said, "all vertebrate eyes, with the exception of a small group of salamanders, have no power of restoring a lost lens. . . . The common vermilion-spotted newt is an example of the rare group which has the ability to replace the completely excised lens by a growth of cells from the pupillary margin of the dorsal rim of the iris."

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CHEMISTRY-BIOLOGY

Heavy Carbon Atom "Tags" Obtained by Easy Method

"TAGS" for atoms made of heavy carbon, used to follow biological processes in plants and animals, may be obtained with a piece of equipment that "could be operated in the corner of any biochemical laboratory, serviced by an assistant in a small fraction of his working time," declares Dr. William W. Watson, of the Sloane Physics Laboratory of Yale University (*Science*, May 16).

Ordinary carbon consists of atoms of weight 12, to the extent of 99.3%, the remaining 0.7% being atoms of weight 13. By the thermal diffusion method, in which a heated wire makes heavy atoms move down and light ones up, the concentration can be altered, and this is the

system that Dr. Watson used. The carbon with a higher percentage of heavy atoms behaves in bodily processes just like the ordinary kind, but since it can be identified, it is possible to trace the course of this element.

Dr. Watson made the separation in methane gas, which consists of carbon and hydrogen. To obtain one gram (1/28 ounce) of heavy carbon in the form of methane in which it is present to the extent of 20%, the equipment would use, over 140 days, about 22,000 kilowatt hours of electricity. This would cost around \$300. However, he states, biochemists use only amounts of a few thousandths of a gram for their experiments, and the concentration does not always need to be as high as 20%. Thus he favors this method for general use over another, that of chemical exchange, which has about 20 times the production rate, but is more complicated and uses hydrocyanic acid gas, a deadly poison.

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ZOOLOGY

Tadpoles Subject of Exhibit at Field Museum

THE humble tadpole has his innings in a new exhibit just opened at the Field Museum of Natural History in Chicago. It consists of enlarged models of tadpoles of various species, made of accurately colored plastics by Preparator Frank H. Lett, under the direction of Clifford H. Pope, curator of amphibians and reptiles. Included in the exhibit are not only the familiar forms, but also strange species from foreign lands.

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A good deal of mountain country in *Palestine*, once thought unfit for agriculture, is now terraced and extensively planted with fruit trees.



ODDITY

This enlarged model of a Chinese tadpole with expansible mouth may be seen at the Field Museum of Natural History. The unusual mouth is used for surface breathing and for aid in feeding. At rest the folded lips curl upward like points of a crescent moon.

GENERAL SCIENCE

Navy, Inventor of FM and Indian Physicist Honored

Franklin Institute Awards Ten Honors at Its Annual Medal Day Exercises; First Award of Brown Medal

THE United States Navy, an East Indian physicist and an American electrical engineer known for his invention of static-free "frequency modulated" radio, were among the recipients of the ten awards presented by the Franklin Institute at its annual Medal Day exercises.

To the Navy was awarded the gold Cresson medal for the "development of means for saving human lives in disabled submarines and the successful application of the United States lung and rescue chamber to this end." This is the apparatus that rescued the survivors of the Squalus disaster in 1939.

Dr. Edwin H. Armstrong, professor of electrical engineering at Columbia University, known for many earlier contributions in radio as well as his invention of F. M., is one of the two recipients of the Institute's highest award, the gold Franklin Medal. His citation reads: "In recognition of his pioneer work in regeneration and the oscillating vacuum tube circuits, in the invention of the superheterodyne circuit, the super-regenerator, and a system of wide-swing frequency modulation, each an outstanding contribution to the communication art." Following the award of this medal, Dr. Armstrong addressed the meeting on "The New Radio Freedom."

The other Franklin Medal was given to Sir Chandrasekhara Venkata Raman, director of the Indian Institute of Science at Bangalore, Mysore, India, "in recognition of his many brilliant contributions to physical science and of his leadership in the renaissance of scientific work and scientific education that has occurred in India during the last thirty years." He is known for his discovery of the "Raman effect," a change in color of light scattered by certain very pure liquids, which has been important in physical science. He was awarded the Nobel prize for his work in 1930.

As Sir Chandrasekhara has not been able to come to the United States, his medal was received by the British minister, Sir Gerald Campbell. A paper by Sir Chandrasekhara on the scattering

of light in crystals was read at the meeting.

Other awards were: To Dr. Harold E. Edgerton, of Massachusetts Institute of Technology, the Potts gold medal, for high speed motion pictures. To John M. Lessells and Dr. Charles W. MacGregor, also of M. I. T., the Levy gold medal for their studies on a nickel-chrome-molyb-

denum steel alloy. The Walton Clark gold medal to Raymond M. Conner, organizer and director of the American Gas Association's Testing Laboratory in Chicago. The Brown medal (of silver), given for the first time, to Dr. Willis H. Carrier, of the Carrier Corporation, for achievements "in the field of Heating, Ventilation and Air Conditioning."

To Harold S. Black, of the Bell Telephone Laboratories, the silver Wetherill medal, for his invention of the negative feedback amplifier. To Benjamin J. Wilson, of the Leeds and Northrup Company, for a new type of meter for measuring the flow of liquids, the Longstreth silver medal. To Charles W. Akers, president of the Breeko Corporation, a certificate of merit for a block for floor construction.

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PHYSIOLOGY—ANATOMY

Thyroid is Fast-Working Organ

Radioactive Iodine Shows

THE THYROID gland in the throat, which secretes and stores iodine for the body's physiological needs, is a fast-working organ. Six minutes is all it needs to receive and concentrate iodine taken into the blood stream, it is indicated in researches reported before the meeting of the American Association of Anatomists, by Dr. Charles Philippe Leblond and Dr. Pierre Sue, formerly of the Laboratoire de Synthèse Atomique at Ivry, France, and now of the University of Rochester.

The two French physiologists used the now familiar technique of tracing elements artificially made radioactive through the bodies of experimental animals. In the present instance, of course, iodine was the radioactivated element employed. Within six minutes after it had been injected into the veins of their rats and guinea pigs its concentration in the various body tissues had reached a constant level.

In the thyroid this level was 20 times greater than it was in other body tissues. Within the gland itself the high concentration was altogether in the storage material known as the colloid; the active cells of the thyroid contained no more iodine than did cells of other body parts.

Evidence confirming the belief that the thyroid acts under the physiological direction of the hypophysis, "master gland" located within the skull, was produced

when Drs. Leblond and Sue removed this gland from some of their animals. Thyroid iodine thereafter declined in concentration, and four months after the operation was only one-sixth of what it was in normal animals, although remaining greater than in other organs.

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New Find in the Head

IT MIGHT be supposed that the anatomy of the human head is pretty completely known; nevertheless a new structure was revealed at the meeting by Dr. Stacy R. Guild of the Johns Hopkins University. The new-found structure consists of a tiny flattened mass of exceedingly fine blood vessels, intermixed with flattened cells and supplied with nerves, the whole affair being smaller than the head of a pin. It is located immediately below the bony floor of the middle ear, close to one of the more important head nerves.

Dr. Guild proposed the name "glomus jugularis" for the structure. Its function is not known, but its discoverer suggested that it may have something to do with the regulation of blood circulation. He also suggested that similar bodies may exist elsewhere along the peripheral circulatory system.

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SPEEDING MACHINING

A test "billet" of armor plate is here being machined with a tungsten carbide cutting tool at the plant of the Carboloy Company, Detroit. The fast machining of cast armor plate is a difficulty in tank production. It is hoped that the use of this sort of cutting tool may speed the process.

METALLURGY

Defense Work Speeded by New Way of Making Parts

New Industrial Revolution Predicted Through Use Of Powdered Metal Molded Under Heat and Pressure

ALTHOUGH science has not yet found out exactly what happens in the process, the making of metal parts for machinery used in defense and other industries from powdered metal under heat and pressure promises a new industrial revolution. The Axis powers have already made wide use of these methods to speed their production, but they are now coming into extensive use in this country, announced Dr. Harvey N. Davis, President of Stevens Institute of Technology, which is inaugurating a special laboratory for powder metallurgy.

As an example, Dr. Davis cited the oil pump gear of a 1940 automobile.

"Previous to the production of this gear from powders," he said, "it was customary to produce it from a cast iron gear blank by generating the teeth in a

highly specialized gear shaper. It was startling to find that a gear possessing comparable physical properties could be accurately produced in large quantities by simply filling a mold with an iron or mild steel powder which would pass through a one hundred mesh screen, subjecting the powder to a moderately high pressure of approximately 15 tons per square inch and applying a consolidating and welding heat treatment to the pressed powder compacts.

"The molded gear proved in service to be lighter, more nearly noiseless, and in every way more satisfactory than the machined cast iron product, and it was produced at a fraction of the cost of its predecessor. Many other articles have been similarly produced from ferrous and non-ferrous powders and it is becoming

generally accepted that in a great many applications the molding of metal powders will eventually replace other production methods."

Development of these methods may lead to amazing results, said Dr. Davis, who continued:

"Imagine, for example, an exhaust valve for an airplane engine, fashioned and completely finished to exact size in one operation, the rim of which is composed of a special alloy peculiarly well fitted to hold an accurate seating surface, while the cap merges over into another alloy specially fitted to resist high temperatures, and the stem is made of still a third alloy specially fitted to withstand wear as it moves back and forth through its guides. Of course, many new problems, such as differential thermal expansion, to say nothing of the as yet unsolved problems of the diffusion alloying of the steels themselves, would have to be worked out before such a valve could be made. But here, as everywhere in the field of powder metallurgy, the slogan of its devotees is never 'impossible' but always merely 'not yet.'"

Cutting tools used in lathes, millers and similar machines used for making other machines, are made in this way, he stated, citing the cemented carbides "which have proved to hold such an important position in our present defense program as superlatively high speed cutting and metal working materials."

The Axis powers, he said, are believed to have gained much of their large scale production by the use of similar cemented carbide cutting tools applied to ordnance and munitions.

No one yet knows exactly how minute particles of metal are made to adhere so tightly to one another at temperatures far below their melting points. Another mystery is why some mixtures shrink considerably, while others, almost the same, shrink hardly at all. To understand more fully the finer points of these phenomena and to apply them intelligently in industry, it was decided to establish the powder metallurgy laboratory at Stevens Institute, Dr. Davis declared. Here, he announced, technical personnel will be trained, researches will be made with the cooperation of several large manufacturing corporations which have established fellowships, and the unknown fundamentals will be investigated.

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There is a trend toward lighter-weight bottles in the glass container industry.

ZOOLOGY

Wine Colored Shark Has 20 Rows of Teeth

A WINE COLORED shark with 20 rows of teeth, its whole underside shining with a ghostly light at night, is only one of the strange monsters of the deep described in a new Smithsonian Institution technical publication on sharks and rays, written by Dr. Henry W. Fowler of the Philadelphia Academy of Sciences.

The name of the weird shark is *Isistius braziliensis*, and it is found in tropical waters the world around. In common with many other marine animal species, it produces phosphorescent light. In this particular species the luminous parts are confined to the underside of the body. It will keep on shining for several hours after it is dead.

The biggest sharks, says Dr. Fowler, are the most inoffensive. These monsters, known as basking sharks, are either so goodnatured or so stupid that they never molest anyone, and if attacked they only try to get away. They cannot even swim very fast.

Usually rated as the most dangerous are the tiger sharks or carcharodons. These are found in almost all warm seas, though fortunately they are nowhere abundant. These are the real "man-eaters" that sometimes appear off our own southern coasts.

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WILDLIFE

"Wart" Disease of Deer Suddenly on Increase

A SUDDEN increase in the widespread incidence of "warts," a serious tumor-like disease of the deer, throughout much of the big game country during recent months, has caused widespread alarm among game managers. Cases of infection have been discovered from Oregon to Maine and south to Georgia.

The growths are fairly prevalent in the Carolina deer and scattered cases have been found in surrounding states. A few infections have been reported from the Pacific Northwest. In Maine numerous instances of infection have been recorded from the Isle au Haut, some from Argyle township, two from the region around Cherryfield, one from Mt. Desert Island and yet another from the Gaucomegomac Lake area. In that state, at least, "warts" are not new; concern was

expressed several years ago when dead deer were found heavily infested with the growths.

The "warts" commonly assume the size and shape of an ordinary tumor, appearing more often in multiple form than singly. Usually the head and neck are most heavily infected. The body and legs, however, are not free from attack and quite often deer dead of these tumorous growth have their bodies and limbs literally covered. Sometimes the animals' sight is materially impaired, and not seldom the hearing is completely destroyed by growths in the ears.

The manner in which the warts are transmitted is unknown. Although the contagion is more or less taken for granted, they may not be directly transmissible. An intermediate host may be necessary; it is quite possible that some vector, perhaps the common wood tick, is responsible for the spread of the disease. As yet, however, even the causative organism has escaped detection.

Bucks and does are equally susceptible, and though the white-tailed deer are primarily concerned, it is suspected that mule deer and Pacific black-tails are equally vulnerable. Infected animals ultimately succumb to the disease.

Science News Letter, May 24, 1941

MEDICINE

Warns Against Chewing Poison Ivy Leaves

WARNING against chewing poison ivy leaves in an attempt at desensitization to the poisonous principle of the plant appears in a report by Dr. Seymour H. Silvers, of Brooklyn, N. Y. (*Journal, American Medical Association*, May 17).

He reports the case of a woman who, having had ivy poisoning from contact with the plant for seven years, had been advised by her physician and friends to chew the leaves of the plant with the idea of preventing further attacks. As a result she had a severe eruption on her face, lips and around her mouth, and her tongue and cheeks were so sore she could not eat properly for two days.

Protection against ivy poisoning is frequently attempted by injecting gradually increasing doses of the poisonous principle, something like the desensitization treatments for hay fever. While it is possible to try giving this treatment by mouth, Dr. Silvers states, "it is unwise to suggest the chewing of poison ivy leaves, for the dosage cannot be controlled by this method and untoward reactions may result."

Science News Letter, May 24, 1941

IN SCIENCE

GENETICS

"Synthetic" Wheat Hybrid Resembles Common Species

COMBINING two dissimilar relatives of wheat to obtain a "synthetic" hybrid plant closely resembling the common cultivated species is the genetic feat accomplished at the University of Saskatchewan by Dr. E. J. Britten and Prof. W. P. Thompson (*Science*, May 16).

Ordinary cultivated wheat has 42 chromosomes in the nuclei of its cells. It is commonly believed that it originated as a natural hybrid between two other species with lower chromosome numbers.

To test this theory, Dr. Britten and Prof. Thompson hybridized a 14-chromosome species of wheat (emmer) with a wheat-like grass having only seven chromosomes to the cell. This hybrid plant had 21 chromosomes to the cell, but was completely sterile. The experimenters then treated the hybrid intensively with a solution of colchicine, making daily injections with a hypodermic needle. This eventually resulted in the formation of heads of grain that had wheat's chromosome number, 42, and were fully fertile. In external characters, also, the artificially produced plants showed considerable resemblance to ordinary wheat.

Science News Letter, May 24, 1941

PHYSICS

Produce Temperatures Hotter Than the Sun

SAMPLES of what the interiors of the hottest stars may be like are produced in the laboratories of the National Bureau of Standards, Dr. F. L. Mohler, Bureau physicist, told a meeting of the Society of the Sigma Xi in Washington. By suddenly discharging 40,000 kilowatts of electrical energy through a quartz tube with one-tenth inch bore, a spark was obtained lasting only five millionths of a second, but nearly 50 times as bright as the sun while it lasted, and having a temperature of 45,000 degrees Fahrenheit. New understanding of the properties of matter at extreme temperatures is expected to result from these studies.

Science News Letter, May 24, 1941

THE FIELDS

ORNITHOLOGY

Starling Invasion Reaches Rocky Mountain Region

STARLINGS, long a major pest in the East, have apparently become firmly established in the Rocky Mountain region. S. W. Gadd, Colorado Springs ornithologist, states that Colorado was entirely free of them until the winter of 1938-39. Then a group of about 75 was discovered on the South Platte watershed north of Denver. Now they are spreading into the city in large numbers.

"Recently I found a flock of starlings at the Johnson reservoir, just south of Colorado Springs," says Mr. Gadd. "It is safe to predict that starlings will soon become a major worry in the Pike's Peak region and the eastern Rockies generally."

Science News Letter, May 24, 1941

PHYSICS

Urges U. S.-Supported Scholarships in Physics

A THOUSAND undergraduate scholarships and 500 graduate fellowships in physics in American colleges, supported by funds from the Federal Government, are urged as the best solution to the critical shortage of physicists in defense work, in a leading article in the May issue of the *Review of Scientific Instruments*. The article is signed "G. P. H.," the initials of Dr. Gerald P. Harnwell, director of the Randal Morgan Laboratory of Physics of the University of Pennsylvania and editor of the *Review*.

"This is predominantly a technical war," he states, "and the training of scientists must not be throttled, or there will not be personnel to fill key positions. The production of brains is the most essential industry and it is idle to subsidize courses for machinists and stifle the brains to design new machines. The most advanced student is the most obvious asset, but if there are no elementary students there will be no advanced ones. If we can look five years ahead for a two-ocean navy, we must look the same period ahead in education. This is about the interval needed to train adequately

the physicists who will then be even more essential than they are now."

If the government scholarship program is adopted, the writer urges, "subversive influences would have to be guarded against and political interference, lowering of standards, etc., could not be tolerated, or the whole program would defeat its own purpose, and the final state of physics would be worse than the first." He thinks that the problems could be solved if the general supervision of the scholarships was in the hands of the National Academy of Sciences, the American Council on Education or some similar group. The details of administration should be handled by the colleges and universities "who have for so many years been disbursing their own funds in a suitable way and for the same general purpose."

Science News Letter, May 24, 1941

PHYSICS

200,000,000 Electrical Particles in Every Breath

TWO hundred million particles in every breath a person exhales are the reason that the breath is visible on a very clear, cold morning.

Discovery of these particles, each nearly 100 times as big as an air molecule and which were previously unknown to science, was announced by Dr. George R. Wait, of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. The majority of the particles, he finds, are electrically charged, either positively or negatively.

Such particles, he said, are common in the air over chimneys, and the exhausts of automobiles. Perhaps those in the breath, he suggests, are the "smoke" of the fires of life itself, the constant burning in the body which keeps up its temperature.

On a cold morning, the moisture in the breath condenses around these particles. Consequently, it would be expected that in an open, snow-covered countryside, or in a desert, where the air is normally free of them the breath would be invisible. Even under such conditions, when the temperature is low, it can be seen, and this is explained by Dr. Wait's discovery of the particles in the breath itself.

The particles from the lungs, in a room where several people are assembled, quickly capture smaller ions, or broken air molecules, already present. He suggests that perhaps they play some part, as yet unknown, as carriers of disease-bearing microorganisms.

Science News Letter, May 24, 1941

MEDICINE

Drugs Offer Four to One Chance of Gonorrhea Cure

THE sulfa drugs, sulfathiazole and sulfapyridine, offer a four to one chance for cure of gonorrhea in men within five weeks after beginning of treatment, the U. S. Public Health Service announced. The statement is based on findings in eight clinics cooperating with the Public Health Service and the American Neisserian Medical Society, a national organization of doctors specializing in gonorrhea treatment and research.

Of the two sulfa drugs, sulfathiazole is more effective in gonorrhea than sulfapyridine, clearing up symptoms faster and having fewer toxic effects. Symptoms disappeared within one week in 61% of the patients treated with sulfathiazole, but complete cure takes five weeks.

Treatment of gonorrhea by drugs is now so effective that the Public Health Service officials believe the disease can be eliminated as a public health problem within several years if an adequate nationwide program were developed.

Science News Letter, May 24, 1941

PALEONTOLOGY

Skull of Giant Rodent Found in Montana

THE SKULL of a giant rodent, representing a hitherto unknown genus of extinct animals, is described (*Science*, May 16) by Dr. George Gaylord Simpson of the American Museum of Natural History. The specimen, together with a few fragmentary skeletal bones of the same animal, was found in the White River region of Montana last summer by Kenneth Briggs, of Baker, Mont., who sent it to the Museum for study.

The skull has a length of 160 millimeters, or 6.3 inches. This is considerably greater than the skull length of the California golden beaver, largest existing North American rodent, which averages around five inches.

The find was made in a stratum of Oligocene geologic age, but the animal shows kinship to a group of smaller rodents hitherto known only from the previous age, the Eocene. It therefore probably represents a line of survivors, the largest but last of its tribe.

Dr. Simpson has given the animal the zoological name *Manitsha tanka*, which is Sioux for "big gopher."

Science News Letter, May 24, 1941

PSYCHOLOGY

Morale Defense

Protection of America's Fighting Spirit Vital To Defense; Recognition of Individual Important

By MARJORIE VAN DE WATER

MORALE protection is a vital part of America's national defense.

Tanks and airplanes, guns and destroyers are important. But we need psychological armor. The quality of morale may determine whether democracy shall survive.

Morale protection cannot be produced in rushing factories, machine shops or foundries. Yet it is receiving the serious attention of defense officials.

Arming the minds of America for defense means protection against discouragement, suspicion, fatigue, anxiety, confusion and mental strain. Any such weakness in the armor of the spirits of the people would provide an opening through which the fifth-columnist, the propagandist, the terrorist might destroy democracy.

First line of defense in the protection of morale is in the physical well-being of the people.

The health of all Americans must be assured. Of greatest importance is the health of the armed forces and that great army of workers engaged in making America the arsenal of the democracies.

In this critical time all must have enough food. They must have the right kind of food.

Protection in Enriched Bread

Fortunately, just in time to be of the utmost service in our national defense, has come the discovery of how important the B vitamins are for morale. Protection against the "jitters," nervous apprehension, worry—even nervous breakdown—has been found contained in those food essentials which are natural parts of whole-grain bread. Restoring the vital food factors to our refined flour and bread has been an important stride in the defense of America's minds and spirits.

Other vitamins, less directly connected with mental health, contribute to morale by protecting the physical well-being without which mental well-being cannot be attained.

Other food elements, besides the vitamins, are important. We cannot be sure

of iron in the souls of Americans without iron in the diet. Iron is essential to good blood. "Red-blooded Americans" must be more than just a figure of speech.

We must get enough sleep. Next to food, sleep is essential to the defense of morale. Scientific experiments have shown that a night of broken sleep breaks down a person's feeling of well-being the next day. The "blues," depression, inability to work at regular efficiency—this is the price often paid for habitual loss of sleep or for interruptions in it. The worker who is sleep-hungry must make a greater effort to concentrate. Physical exertion is more difficult.

The Government's housing program for defense workers is an essential step toward insuring proper rest and sleep for those who need it most. Restful sleep is impossible where quarters are crowded and noisy, beds unclean, ventilation poor.

Relief From Pressure

Rest periods become of greater importance when work is carried on under pressure and strain. The worker in a munitions factory who must keep his attention constantly alert should be permitted to relax completely at fairly frequent intervals. The high-pressure executive and dollar-a-year man has just as much need to get away from his desk and let down for a few minutes some time during his long day.

Pressure for working space should not be permitted to crowd out rest rooms and recreation areas that provide for relaxation. Employees should not be given the feeling that rest is a waste of time when time is precious.

Instead, relaxation at intervals should be encouraged and even insisted upon. Little comforts for workers that may seem trivial should be provided—access to cold drinks on hot days or hot drinks on cold days, candy for those who need extra energy, showers, beauty parlors and barber shops in the neighborhood of offices and plants so that employees can secure those attentions to the person that bolster morale without undue sacrifice of their limited leisure.

Exercise is important, too. In the same

America that is seeing young boys leaving school and office desk to take up unaccustomed physical drill in the army, other boys and girls, men and women are leaving the farm and outdoor life to sit long hours at a desk or work bench.

It is inevitable that they feel "cooped up." And if their need for strenuous physical exertion is not satisfied, the result is likely to show up as restlessness, discontent, nervous irritability.

Eliminate Needless Worries

America's good spirits depend upon freedom from needless worries.

Next to physical health and well-being, it is of utmost importance to keep the mind free from a clutter of petty irritations and distracting concerns.

The soldier going off for his year of training must do so without having to wonder about what will happen to his car that is partly paid for. He shouldn't have to worry about his house, his job, his standing on retirement and other security plans. This has been very carefully planned for by those who drafted the selective service legislation.

These things are important, too, for the defense worker who must leave home to go into munitions plant, shipbuilding yard, or government office.

Local organizations and communities may have the responsibility for seeing that such worries are relieved for the defense worker.

News from home is important in keeping up the morale of both soldier and civilian. The saying, "No news is good news" does not apply here. There is something about the tense atmosphere of a warring world that sets the imagination to work. If you do not hear frequently from those who are important to you, you are likely to guess at the worst.

The civilian soldier may have some difficulty in adjusting to his new life in camp and may be irked by new experience with discipline, rules and numbers of strange and unpleasant duties. But the industrial and office worker in emergency times is likely to be confronted with many kinds of irritation that the soldier escapes.

Having to drive home at night at a snail's pace in a jam of heavy traffic! No place to park! Strap-hanging on crowded street cars and buses! Waiting in a long line for a ham on rye at a

cafeteria or drug store! Unexpected overtime when you have a heavy date! Frequent changes in jobs, in orders, in bosses!

Girls have their own minor troubles. Stores a long way from the office and closed every time you have a few hours off! Beauty parlors inaccessible!

Always crowding and waiting everywhere, for everything.

These are the irritations that "get on your nerves." They can be prevented to a large extent by community action and cooperative planning by workers, employers and business men.

They must be prevented, if America's vital defense work is to go on without the sabotage due to frayed nerves.

Vital to morale in a democracy is confidence in leadership. People must respect and have faith in the President and also in the generals and admirals, the boss in their factory, and the policeman on the corner.

In a free America, such confidence in those who lead and protect us is based on abundant information.

"In democracy there can be no hold-outs," as Paul V. McNutt, Federal Security Administrator, said recently in a talk on morale. "America can give its people the facts."

Newspapers Giving Facts

Newspapers in America, free from censorship or imposed distortion of facts, give this information to the people as it is given nowhere else in the world.

If the growing immensity of the defense program should clog existing facilities by which the newspapers and the people obtain their information, new facilities must be set up and made available.

Teachers, libraries and many other groups are cooperating in conducting public forums and in making available newspapers, books, motion pictures, and other means for giving the public the information they need for their peace of mind.

In time of emergency, a fear is likely to arise that free discussion of public issues, free criticism of government policies and officials will undermine public confidence.

But this danger is recognized to be not nearly so great as that of any attempt to bridle free discussion. As often as questions of government policy are raised, they should be patiently and clearly explained. It is not equally easy for every citizen to learn the meaning of what is being planned and done. But

such understanding is essential to public morale and confidence.

When the rapid changes in the swiftly shifting political scene make necessary changes in policy, the public should be carefully prepared for them. There must be no surprises. No lightning, overnight about-faces. The individual citizen must be able to anticipate new moves on the part of the nation. He must be mentally adjusted to them in advance, or he will be hopelessly confused. And confusion rapidly leads to loss of morale.

Broadcasting of information about national strength and weaknesses, encouragement of free discussion and expression of unfavorable as well as favorable opinion, and advance warning of national policies—all these are handicaps to a nation in a warring world from the military point of view.

But all are essential for the peace of mind, confidence, and morale of the people.

Balance Both Interests

The two interests must be carefully balanced so that neither is unnecessarily sacrificed for the other.

Defense of the spirit of America demands that each man, woman and child keep a feeling of importance as an individual.

War and military preparations have a tendency to drown out the individual in the urgency of looking after group interests. But individual plans and needs

must not be completely submerged. Individuality is important to morale.

It is partly for this reason that the Army in its classification is giving each selectee a long and careful interview. They do not want to disrupt personal plans and goals any more than necessary. They want to further a man's vocational career if they can. The selectee cannot pick the job he prefers in the army, but army officials are doing what they can toward placing men according to individual experience and skills.

The sacrifices of personal interest of civilians should also be softened as much as possible.

Efficiency Plus Satisfaction

Recognition of special abilities and talents is one way in which the individuality of the civilian contributing to defense can be respected and preserved. And it makes for efficiency as well as morale to place each man where he can contribute most to the nation's welfare.

In a democracy, the state exists to protect the rights and interests of the individual. Here, each person must be permitted and encouraged to be himself.

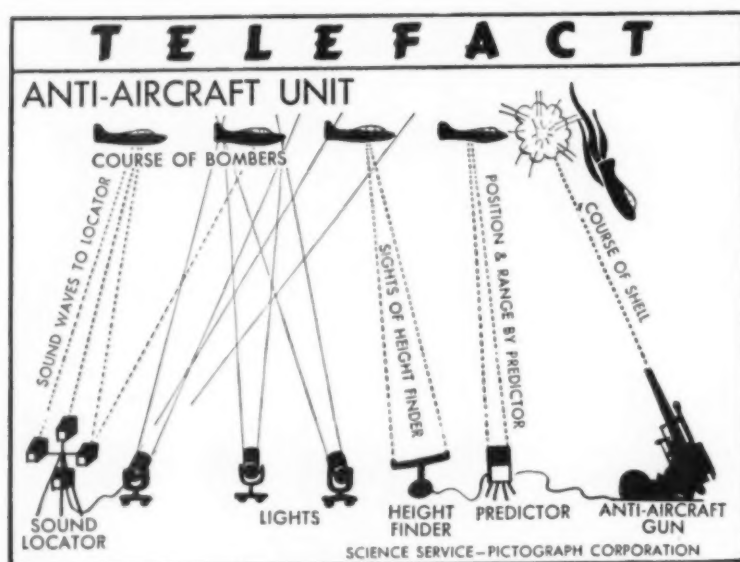
He is allowed the maximum of freedom to come and go as he pleases and as his employment and finances permit. He chooses his own associates, makes his own selection of ways to spend his leisure.

So far as possible he must be given his own choice of the possible types of



VOICE RECORD

A continuous record of prolonged microscopic observations is achieved with great ease by Dr. J. W. Miller of the National Institute of Health by this clever combination of apparatus. The mouth-piece of a voice recording machine is placed in front of Dr. Miller so that he may speak into it without moving his head or eyes. The elbow pads and hand position controls are conveniences for prolonged observation.



service he may render his community and his nation.

He must feel free of fear. There must be no spying of neighbor upon neighbor or of police or volunteer vigilante. Well-meaning citizens must be able to go about their personal affairs with a minimum of questioning.

And there should be individual recognition of personal achievement. When a man does an unusual service to the community or to the nation, when he has a useful idea, he should be given due honor. His own achievements should not be lost sight of in an organization.

The Army has long realized this human need for individual recognition. There are many honors, citations, badges, stripes and so on for various types of distinction.

Civilian life has all too little of this. Communities might well offer more in this way. Mention in local publications, city citations, honor rolls might be provided for the living as well as for those who have died in the nation's service.

We can't all be key men, dollar-a-year experts, generals, or defense executives. But even the John Does of America can be important by belonging to an organization which is important.

The boy who joins the Army or the Navy adds in this way to his feeling of importance. When he puts on the uniform of Uncle Sam, he becomes more than he was before—he is now a soldier or a sailor in the nation's service, and as such very important to the welfare of his country.

Civilians have this feeling of important service if the groups to which they belong receive general public recognition

as important and really valued agencies.

The member of a labor union, manufacturer's association, citizen's association, lodge, fraternity, Red Cross, church, volunteer fire department, Boy or Girl Scouts, or any other civic or community organization adds to his own self-respect through the respect accorded to his organization.

In a time of emergency it is important that every individual in the nation—man, woman and child—should be encouraged to belong to some organization that is playing an active and important part in the nation's defense.

As many as possible should be leaders in some sort of work. Local committees for the care of various defense duties, neighborhood committees, small groups for occupations or for certain age levels multiply the opportunities for leadership in important phases of work for the national welfare.

Students in colleges, high schools, and even grade schools can be given much broader opportunities to take an actual part in national and community service. This would be a much better preparation for citizenship in a democracy than can be obtained from any amount of reading in the most carefully selected textbooks.

It has been proposed that students take and then later give first-aid courses. Girl students might form organizations that would be responsible for the care of children of defense workers. College students, particularly graduate students, might devote some of their spare time to giving instruction in evening defense training courses. They can aid in adult education classes, Americanization

classes. Girl students might contribute lectures in the community on newer knowledge of nutrition, chemistry for the home, and so on.

Students of all ages can learn to contribute to community music and recreation programs.

Activity in the nation's service and personal contributions of time, work, and thought to build up America's defenses serves thus a double purpose. Not only does it make the whole fabric of democracy stronger, but it lifts the spirits of those taking part in this united endeavor.

Science News Letter, May 24, 1941

MEDICINE

Ask Trial of Tannic Acid Treatment for Poison Ivy

TRIAL, under medical supervision, of a tannic acid treatment for poison ivy is urged by the U. S. Public Health Service on the basis of experiments by its scientists reported in detail in Public Health Reports. (May 16.)

Tests on a limited number of persons at the close of last year's poison ivy season were most encouraging. Itching and discomfort stopped within one or two days after beginning of the treatment and all symptoms disappeared at the end of a week.

A 10% solution of tannic acid in water is used. This solution is applied to the inflamed area after previous cleansing with alcohol. The treatment should not be attempted by laymen, it is stated, because, among other reasons, it might do more harm than good if it were used on some skin inflammation that was not due to ivy poisoning. The treatment was developed by Dr. Louis Schwartz and Dr. Leon H. Warren.

To prevent ivy poisoning, these same scientists working at the National Institute of Health developed a vanishing cream containing 10% sodium perborate. The cream is to be rubbed into the skin before going into woods or fields where there may be poison ivy plants. Directions are to wash off the cream with soap and water and put on fresh cream every four hours if you are going to be in the fields or woods all day. The vanishing cream should be made up fresh every two weeks.

Both the protective vanishing cream and tannic acid treatment are effective against both poison ivy and poison sumac.

Science News Letter, May 24, 1941

In some parts of the Sierra Nevada Mountains of California average snowfall for a year totals 25 feet.

MEDICINE

Eleven Viruses Attack Human Nervous System

Include Infantile Paralysis, Sleeping Sickness, Horse Sleeping Sickness and Even Fever Blisters

"ELEVEN different kinds of viruses are now known to attack the human nervous system and to produce as many distinct maladies," Dr. Albert B. Sabin, associate professor of pediatrics at the University of Cincinnati, declared at the meeting of the American Academy of Pediatrics in Chicago.

Viruses are disease germs so small that they cannot be seen under even high-powered microscopes. Influenza, measles and yellow fever are caused by viruses, but these are not the nerve-attacking type which Dr. Sabin described.

The eleven viruses that attack the human nervous system are: infantile paralysis; St. Louis encephalitis (encephalitis is popularly termed "sleeping sick-

ness"); Japanese encephalitis; Eastern equine encephalomyelitis (so-called horse sleeping sickness); Western equine encephalomyelitis; rabies; louping ill; lymphocytic choreomeningitis; pseudo lymphocytic choreomeningitis; "B" virus; and herpes simplex, or fever blisters.

Besides these 11 known viruses and the maladies they cause, there are at least two other diseases of the human nervous system which are probably caused by viruses although the infectious agents have not been isolated. These are the epidemic encephalitis or "sleeping sickness" which was so prevalent during and immediately after the last war and herpes zoster or shingles.

The first four of these viruses that at-

tack the nervous system have caused epidemics of diseases, affecting thousands of people at a time, Dr. Sabin pointed out, while the others occur only sporadically. Most of these viruses can produce unrecognized or very mild infections without any signs of involvement of the nervous system.

The virus of fever blisters is an example. It not only can invade the central nervous system of animals and produce fatal disease in them, but there is suggestive evidence that even in human beings it may wander beyond the skin and mucous membranes.

Lymphocytic choreomeningitis appears to affect mice and dogs under natural conditions but is transmitted to human beings. Pseudo choreomeningitis is a new virus recently identified in England. "B" virus occurs in monkeys under natural conditions and has been known to cause disease in at least two laboratory workers who were bitten by monkeys and presumably also in a former king of Greece.

The 11 known viruses that attack the nervous system are as different and distinct from each other as are the germs of tuberculosis, typhoid fever and pneumonia, and the viruses, even though they

PREPUBLICATION ANNOUNCEMENT

THE GENETIC AND ENDOCRINE BASIS FOR DIFFERENCES IN FORM AND BEHAVIOR

as elucidated by studies of contrasted pure-line dog breeds and their hybrids

CHARLES R. STOCKARD, COLLABORATORS, AND O. D. ANDERSON AND W. T. JAMES

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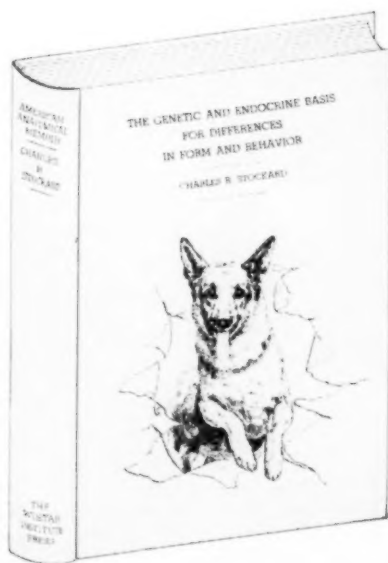
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cannot be seen under the microscope, can be identified with as much certainty as the tubercle bacillus. The identification is made by determining whether or not the unknown virus can produce disease in monkeys, mice, guinea pigs and rabbits and by estimating its approximate size from its capacity to pass certain filters and by the changes it produces in infected cells.

All these viruses except those of infantile paralysis, rabies and herpes have been isolated, recognized and identified within the past five to ten years.

Science News Letter, May 24, 1941

PHYSICS

Money May Last Longer As Result of Studies

EVEN though your paper money seems to vanish with ever-increasing speed, it may last longer as a result of a new wear test developed by F. T. Carson and Vernon Worthington, of the National Bureau of Standards. It is aiding the Bureau of Engraving and Printing to tell quickly the effect, for the better or otherwise, of changes made in the paper-making process.

The test is made in two stages. A specimen of the paper is automatically subjected to a crumpling by a piston in a cylinder, then to mechanical fingers which straighten it out. After this is repeated many times and the paper resembles a bill that has been in circulation for several months, air under pressure is forced through its fibers. Measuring the increase in the amount of air that can penetrate it has been found the most valuable criterion of the effect of the crumpling treatment.

This test shows how much the structure has been opened up. It is closely related to the fuzziness of the surface, its ability to catch dirt and to absorb oil or grease, as well as the probability of impairment of the printed images and figures.

Science News Letter, May 24, 1941

MEDICINE

Mouse Foster-Mothers Transmit Hereditary Cancer

Young of a Resistant Strain, When Suckled by Adult Of Susceptible Strain, Also Develop Susceptibility

MICE have shown that it is possible to drink in susceptibility to cancerous disease with their foster-mother's milk, in experiments performed by Dr. Lloyd W. Law at the Roscoe B. Jackson Memorial Laboratory in Bar Harbor, Me.

Dr. Law induced the formation of a lymphoid leukemia tumor (a kind of cancer attacking the circulatory system) in a mouse of an inbred pedigreed strain, by treatment with a cancer-causing chemical. Transplanted bits of the tumor produced the same disease in other mice of the same family tree, while mice of other hereditary strains remained resistant to it. However, when young of a resistant strain were suckled by foster-mothers of the susceptible strain, they developed some degree of susceptibility.

Whether these results can be reversed, to confer resistance on the young of the susceptible strain by transferring them to resistant foster-mothers, has not yet been decided. Susceptible young permitted to feed on their own mothers' milk until they were 12 hours old, and then transferred, proved still susceptible after being reared by resistant foster-mothers. The critical test will come when susceptible young are transferred immediately at birth, and never permitted to feed on their susceptible mothers' milk.

Effects of foster parentage of an even more intimate sort were tested, also on mice of cancer-susceptible strains, by Dr. Arthur M. Cloudman, at the same laboratory. His technique was to transfer

the fertilized egg, destined to become a mouse, from the body of its mother into that of a foster-mother of a different hereditary strain, and let it develop and come to birth.

Dr. Cloudman's two strains were both susceptible, but each had its own kind of cancer, to which the other strain was resistant. It was found that a young mouse developed in the uterus of a foster-mother of the other strain retained its hereditary susceptibility to its own kind of cancer, and at the same time picked up at least partial susceptibility to the foster-mother's kind, when bits of the diseased tissue were transplanted into its body.

This "foster-susceptibility," however, seems to diminish somewhat with age, for when the cancer-tissue transplants were made at the age of one month the young mice all developed the disease, whereas mice kept two months before receiving the transplanted tissue developed the tumors very slowly, and in only five cases out of seven.

Drs. Law and Cloudman both report on their researches in *Science* (April 18).

Science News Letter, May 24, 1941

● Earth Trembles

Information collected by Science Service from seismological observatories resulted in the location by the Coast and Geodetic Survey of the following preliminary epicenter:

Tuesday, May 13, 11:01.8 a.m., EST

About 150 miles off the northern coast of California. Latitude, 40.4 degrees north. Longitude, 126.0 degrees west. Strong shock.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see SNL, Feb 22.

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Wildflower Names

WHAT a wealth of folklore, history and even poetry can be found in the names of common wildflowers!

Sheer, light fantasy, for instance, dances in such names as Johnny-jump-up, wake-robin, spring beauty and snow-drop—all of them flowers of the early season, when spring crowds close on the heels of departing winter. So also for flowers of later blooming: goldenrod, sunflower, Indian paintbrush, morning-glory, day-lily, suggest the splendor which green-leaved plants, alone of living things, are able to borrow from the sun.

Some of the derivations are not so obvious, though it takes but little searching to find them out. You need but break the rhizome and see the red sap flow, to know why the bloodroot was so called. Again, if you look at the six-pointed patterns on the leaf-scars of another rootstock, suggesting the six-pointed star familiar in Hebrew symbolism, you will see at once why the plant is called Solomon's seal.

Sometimes you have to trace the history of language to find the roots of a plant's name. Daisy, for example, was originally *day's-eye*, because the yellow, sun-like disk is shut up at night by the folding ray-petals, like an eye behind its eyelid.

But let not easy analogies lead you astray. The pansy is not named for the eye of Pan, has nothing to do with that mischievous goat-god. It is simply a naively englished form of the French *pensee*—an allusion to the ancient notion that pansies provoke thought. (You remember Ophelia, of course?)

A little further rambling with foreign-language dictionaries will lead you into some genuine classical allusions: how the

iris is named for the goddess of the rainbow, the narcissus for the self-admiring youth at the lakeside. Many of the classic allusions have found their way into English: Venus' comb, Venus' looking-glass, Venus' flytrap—botanists not less than other mortals seem to have been followers of that alluring goddess.

Many of the plants that have plain-English common names were given classic designations by botanists. Thus, the water-lily is *Nymphaea*—could anything be more appropriate? The Latin name of sagebrush is (astonishingly enough) *Artemisia*. A whole pantheon is honored at once in the technical name of the shooting-star, *Dodacatheon*, which is Greek for "twelve gods."

Science News Letter, May 24, 1941

ICHTHYOLOGY

Fight Without Forebrain But Need It in Love

BRAINS are more needed in love than in war by the gorgeous Siamese fighting fish, favorite species with fanciers of tropical fishes. At the meeting of the American Association of Anatomists, Dr. G. K. Noble and Ray Borne, of the American Museum of Natural History, told of the changes in behavior in these and other fish species induced by surgical removal of the forebrain—the part of the brain that in higher animals at least has charge of voluntary action.

Both the Siamese fighting fish and another aquarium favorite, the jewel fish, seemed to be handicapped little or not at all in their fighting by the loss of most or all of the forebrain. However, courting, nest-making (these fishes do make nests) and other activities in the sex complex became impossible when the forebrain was removed. They could get along with either right or left half of it gone, but had to have at least half a brain for successful courtship and family life.

Science News Letter, May 24, 1941

METALLURGY

Largest Electric Furnace Makes Steel for Defense

See Front Cover

LARGEST round electric furnace and second largest electric furnace in the world, shown on the front cover of this week's SCIENCE NEWS LETTER, is located in the Timken Roller Bearing Co. melt shop at Canton, Ohio.

This steel-producing giant poured 80 tons on its first heat.

Science News Letter, May 24, 1941



NEW POLAROID* PHOTO- ELASTICITY KIT

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This new kit offers, for the first time, convenient means of using the brilliant phenomena of photoelasticity in teaching engineering and machine design. With it students may be given a vivid insight into the internal stress reactions of loaded structural elements. Images of plastic models are conveniently projected with a common lantern-slide projector, showing strain patterns in brilliant colors as loads are applied.

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•First Glances at New Books

ORNITHOLOGY

THE AUDUBON GUIDE TO ATTRACTING BIRDS—John H. Baker, ed.—*Doubleday, Doran*, 268 p., illus., \$2.50. This book constitutes a complete manual for the bird-lover who wants to make sure of having feathered neighbors. It goes into all imaginable angles of attracting birds, tells what kinds of food-bearing shrubs to plant, shows how to build and equip bird houses and feeding trays, gives practical hints on the use of water as an attractant, suggests what can be done by way of insurance against over-aggressive predators—especially those of the two-legged variety. The book is liberally sprinkled throughout with the salt of common sense.

Science News Letter, May 24, 1941

HORTICULTURE

GARDENING FOR YOUNG PEOPLE—M. G. Kains—*Greenberg*, 280 p., illus., \$1.50. A gardening book for boys and girls, that shows how much fun there is in helping plants to grow. Anyone who reads (and then puts into practice) all the chapters will be able to qualify as a really accomplished gardener.

Science News Letter, May 24, 1941

ECONOMICS

APPLIED BUSINESS FINANCE (5th ed.)—Edmond E. Lincoln—*McGraw-Hill*, 948 p., \$4.50.

Science News Letter, May 24, 1941

BIOLOGY

THE BEGINNINGS OF SOCIAL BEHAVIOR IN UNICELLULAR ORGANISMS—Herbert S. Jennings—*Univ. of Penn. Press*, 17 p., 25c. (See *S.N.L.*, Sept. 28, 1940, p. 197.)

Science News Letter, May 24, 1941

AERONAUTICS

FLIGHT, A General Survey of Fundamentals of Aviation—Bailey Wright, James J. Smiley, Jr., Rex Martin and others—*Amer. Tech. Soc.*, illus., \$2.50. The relation of air travel to older means of transportation, a glossary of aeronautical terms, a concise history of aviation, as well as the principles of aerodynamics, and an exploration of what keeps an airplane up, are among the many fundamental points covered in this interesting book.

Science News Letter, May 24, 1941

GEOGRAPHY—GEOLOGY

TEN GREAT MOUNTAINS—R. L. G. Irving—*Dutton*, 213 p., illus., \$3.75. A British writer chooses for pen portraits ten outstanding mountains which have

become great, as human personality does, by influencing thoughts, words and actions of mankind. Representing America is Alaska's Mount Logan. Adventures and difficulties of getting acquainted with each of the ten are vividly described.

Science News Letter, May 24, 1941

AERONAUTICS

FLIGHT, Construction and Maintenance—Bailey Wright, W. E. Dyer, Rex Martin and others—*Amer. Tech. Soc.*, illus., \$2.50. Just as important as anyone to the safe and efficient operation of the airlines are those unseen workers who keep the ships in first class condition. This book, one of a series intended either for classroom use or home study, covers such essential points in their training as blueprint reading, oxy-acetylene welding, rigging the airplane and the airplane propeller.

Science News Letter, May 24, 1941

HORTICULTURE

THE GLADIOLUS—Forman T. McLean—*Whittlesey House*, 197 p., illus., \$2. All about the planting and care of one of the loveliest of summer garden flowers.

Science News Letter, May 24, 1941

CHILD STUDY

THE DOCTOR AND THE DIFFICULT CHILD—William Moodie—*The Commonwealth Fund*, 214 p., \$1.50. The medical director of the London Child Guidance Clinic provides this book for physicians and laymen written in non-technical language.

Science News Letter, May 24, 1941

PSYCHOLOGY

THE ADOLESCENT PERSONALITY, A Study of Individual Behavior—Peter Blos—*Appleton-Century*, 517 p., \$3. The report of an investigation by the Commission on Secondary School Curriculum. A major part of the book is devoted to case studies.

Science News Letter, May 24, 1941

ECONOMICS

VOCATIONAL AND OCCUPATIONAL GUIDANCE—Reese Edwards—*Chemical Pub. Co.*, 117 p., \$1.50. A book of British origin.

Science News Letter, May 24, 1941

MEDICINE

THE MARCH OF MEDICINE—New York Academy of Medicine—*Columbia Univ. Press*, 154 p., \$2. (Lectures to the Laity, 1940)

Science News Letter, May 24, 1941

ECONOMICS

EUROPE'S TRADE, A Study of the Trade of European Countries with Each Other and with the Rest of the World—League of Nations—*Columbia Univ. Press*, 116 p., \$2. This special study replaces the annual "Review of World Trade" which the League of Nations in pre-war times published annually. It analyzes in tables and charts the foodstuffs and raw materials which Europe imported and exported before war broke out and describes trends. Relating to the past, this information is significant for the present, the preface writer points out. A complementary volume is expected to follow, dealing with trade of other continents.

Science News Letter, May 24, 1941

MATHEMATICS

INTRODUCTION TO THE THEORY OF EQUATIONS—Nelson Bush Conkwright—*Ginn*, 214 p., \$2. A college text book which is intended for students who have completed a first course in the calculus, though in only a few sections is knowledge of the calculus actually required.

Science News Letter, May 24, 1941

CHEMISTRY

THE SEPARATION OF GASES—M. Ruhemann—*Oxford Univ. Press*, 283 p., \$5.75. Separation of gases has many practical applications. This new book covers the general theories, and also recent important technical advances, particularly in Russia, which have not until now been available in English.

Science News Letter, May 24, 1941

ENGINEERING

HEATING, VENTILATING, AIR CONDITIONING GUIDE, 1941, Vol. 19—*Amer. Soc. of Heating and Ventilating Engineers*, 1236 p., illus., \$5. As in the previous 18 editions of this work—a "must" for superintendents of air-conditioned buildings—most of the chapters have been reviewed or rewritten, while Chapter I, "Thermodynamics of Air and Water Mixtures," is entirely new.

Science News Letter, May 24, 1941

PHYSICS

SURFACE TENSION AND THE SPREADING OF LIQUIDS—R. S. Burdon—*Cambridge (Macmillan)*, 85 p., illus., \$1.75. This newest of the useful series of "Cambridge Physical Tracts" deals with a subject that is becoming increasingly important, for example, in connection with the methods of making non-reflecting films on glass.

Science News Letter, May 24, 1941